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PRIOR ART

FIG. 1

CACHE TYPE
(MINOR INDEX)

	0 (INSTRUCTION)	1 (DATA)
0	LEVEL 0 I CACHE INFORMATION	LEVEL 0 D CACHE INFORMATION
1	LEVEL 1 I CACHE INFORMATION	LEVEL 1 D CACHE INFORMATION

CACHE LEVEL (MAJOR INDEX)

FIG. 2

LEVEL 0 I CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR

LEVEL 0 D CACHE INFORMATION
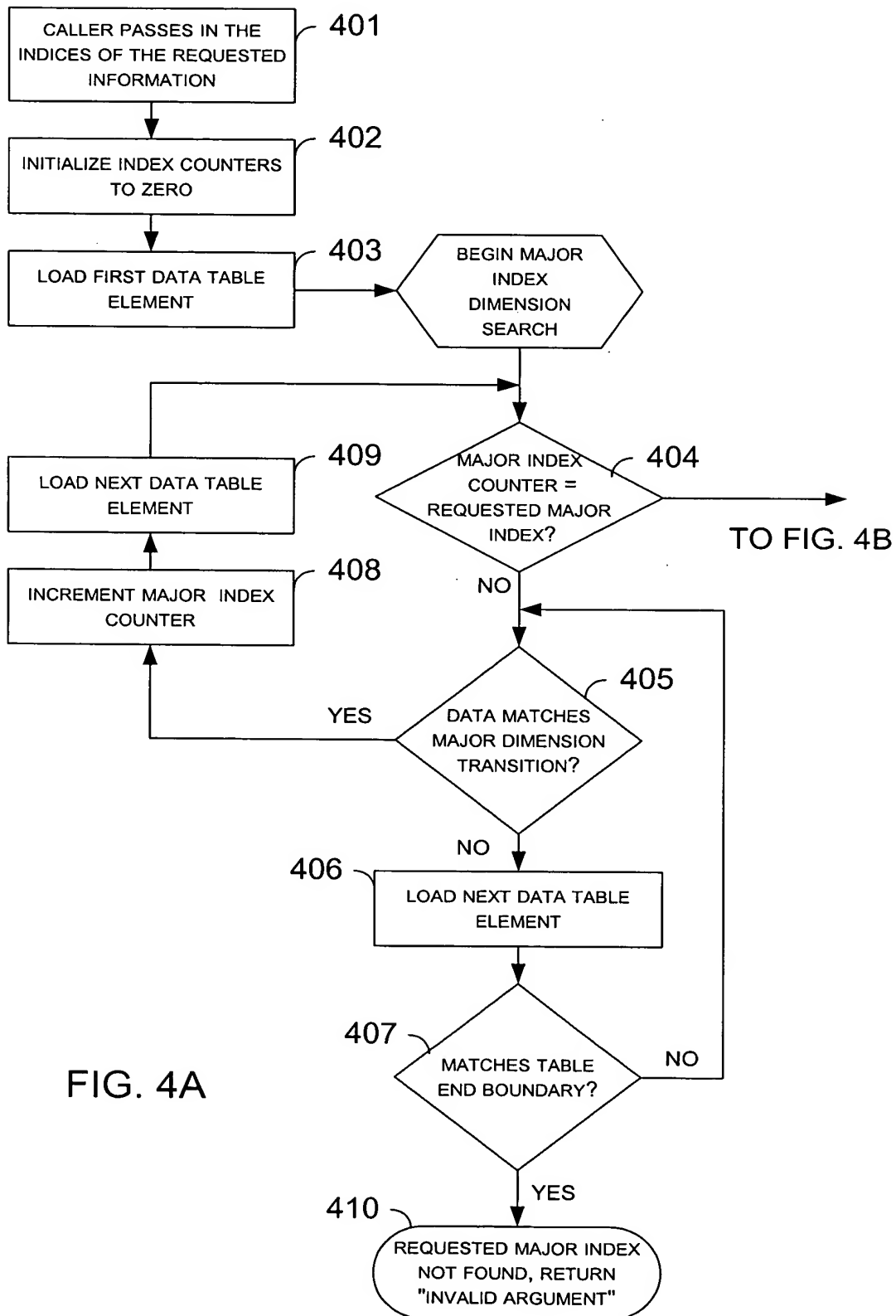MINOR_INDEX_TRANSITION_INDICATOR
MAJOR_INDEX_TRANSITION_INDICATOR

LEVEL 1 I CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR

LEVEL 1 D CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR
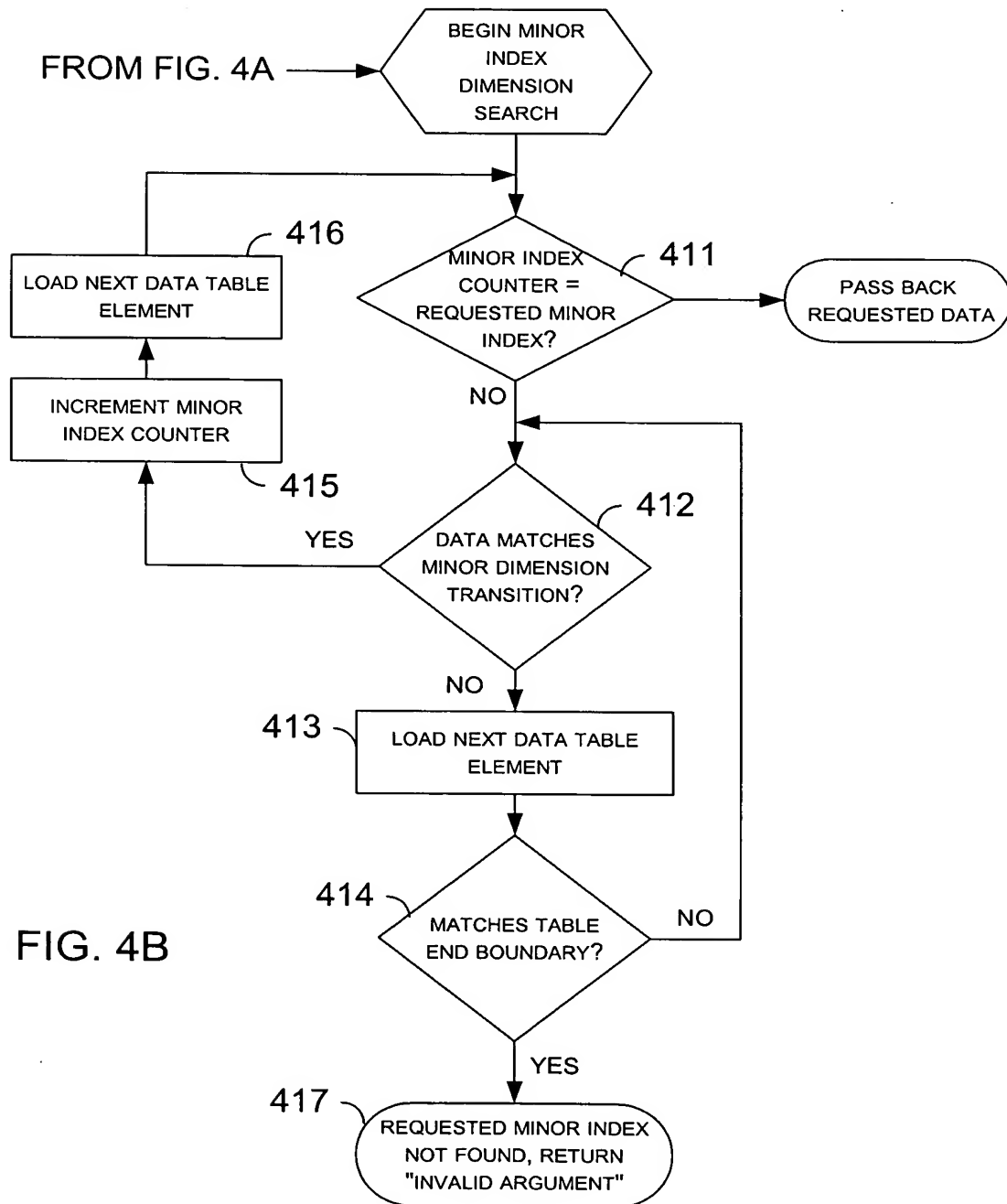MAJOR_INDEX_TRANSITION_INDICATOR

TABLE_END_INDICATOR

FIG. 3

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CALLER PASSES IN THE INDICES OF THE REQUESTED INFORMATION — 401

INITIALIZE INDEX COUNTERS TO ZERO — 402

LOAD FIRST DATA TABLE ELEMENT — 403

BEGIN MAJOR INDEX DIMENSION SEARCH

MAJOR INDEX COUNTER = REQUESTED MAJOR INDEX? — 404

TO FIG. 4B

NO

LOAD NEXT DATA TABLE ELEMENT — 409

INCREMENT MAJOR INDEX COUNTER — 408

YES

DATA MATCHES MAJOR DIMENSION TRANSITION? — 405

NO

406 — LOAD NEXT DATA TABLE ELEMENT

407 — MATCHES TABLE END BOUNDARY?

NO

YES

410 — REQUESTED MAJOR INDEX NOT FOUND, RETURN "INVALID ARGUMENT"

FIG. 4A

MCHARDY

FROM FIG. 4A →

BEGIN MINOR INDEX DIMENSION SEARCH

416 — LOAD NEXT DATA TABLE ELEMENT

INCREMENT MINOR INDEX COUNTER

415

411 — MINOR INDEX COUNTER = REQUESTED MINOR INDEX? → PASS BACK REQUESTED DATA

YES

NO

412 — DATA MATCHES MINOR DIMENSION TRANSITION?

NO

413 — LOAD NEXT DATA TABLE ELEMENT

414 — MATCHES TABLE END BOUNDARY?

NO

YES

FIG. 4B

417 — REQUESTED MINOR INDEX NOT FOUND, RETURN "INVALID ARGUMENT"

CACHE TYPE

	0 (INSTRUCTION)	1 (DATA)
0	LEVEL 0 I CACHE INFORMATION	LEVEL 0 D CACHE INFORMATION
1	LEVEL 1 I CACHE INFORMATION	LEVEL 1 D CACHE INFORMATION
2	NONE	LEVEL 2 D CACHE INFORMATION

CACHE LEVEL

FIG. 5

LEVEL 0 I CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR

LEVEL 0 D CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR
MAJOR_INDEX_TRANSITION_INDICATOR

LEVEL 1 I CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR

LEVEL 1 D CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR
MAJOR_INDEX_TRANSITION_INDICATOR

MINOR_INDEX_TRANSITION_INDICATOR

LEVEL 2 D CACHE INFORMATION
MINOR_INDEX_TRANSITION_INDICATOR
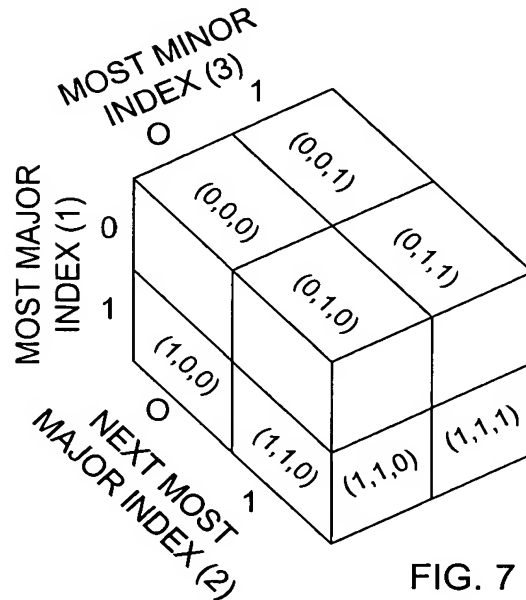MAJOR_INDEX_TRANSITION_INDICATOR

TABLE_END_INDICATOR

FIG. 6

FIG. 7

TABLE ENTRY (0,0,0)
INDEX_3_TRANSITION_INDICATOR
TABLE ENTRY (0,0,1)
INDEX_3_TRANSITION_INDICATOR
INDEX_2_TRANSITION_INDICATOR

TABLE ENTRY (0,1,0)
INDEX_3_TRANSITION_INDICATOR
TABLE ENTRY (0,1,1)
INDEX_3_TRANSITION_INDICATOR
INDEX_2_TRANSITION_INDICATOR
INDEX_1_TRANSITION_INDICATOR

TABLE ENTRY (1,0,0)
INDEX_3_TRANSITION_INDICATOR
TABLE ENTRY (1,0,1)
INDEX_3_TRANSITION_INDICATOR
INDEX_2_TRANSITION_INDICATOR

TABLE ENTRY (1,1,0)
INDEX_3_TRANSITION_INDICATOR
TABLE ENTRY (1,1,1)
INDEX_3_TRANSITION_INDICATOR
INDEX_2_TRANSITION_INDICATOR
INDEX_1_TRANSITION_INDICATOR

TABLE_END_INDICATOR

FIG. 8

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FIG. 9

401 CALLER PASSES IN THE INDICES OF THE REQUESTED INFORMATION

901 SEARCH FOR TABLE SEGMENT CORRESPONDING TO INDEX 1

404 FOUND?
  NO → 410 RETURN "INVALID ARGUMENT"
  YES

902 SEARCH FOR TABLE SEGMENT CORRESPONDING TO INDICES 1,2

411 FOUND?
  NO → 417 RETURN "INVALID ARGUMENT"
  YES

903 SEARCH FOR TABLE ENTRY CORRESPONDING TO INDICES 1,2,3

904 FOUND?
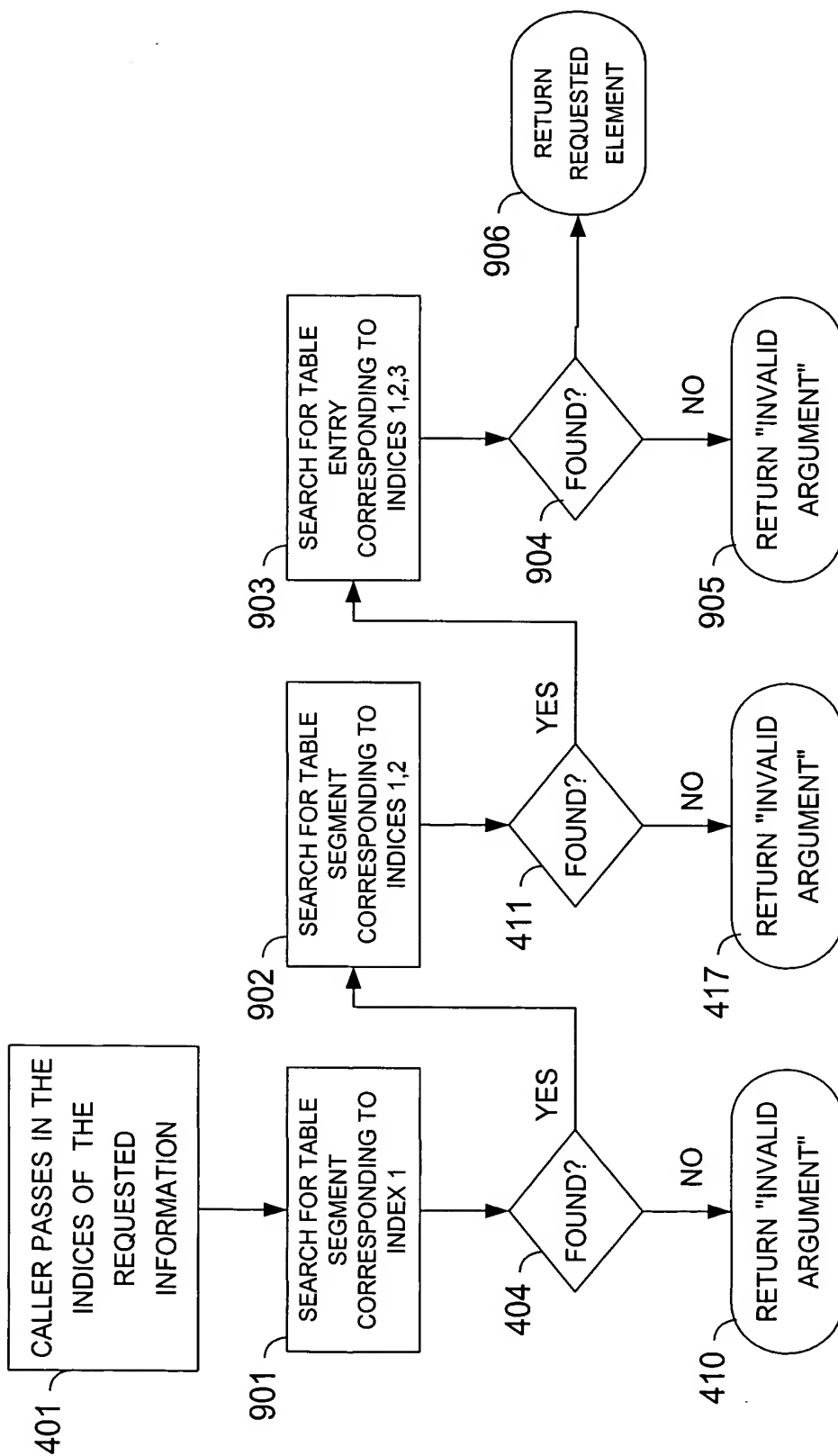 NO → 905 RETURN "INVALID ARGUMENT"

906 → RETURN REQUESTED ELEMENT

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TABLE ENTRY (0)
INDEX_TRANSITION_INDICATOR
TABLE ENTRY (1)
INDEX_TRANSITION_INDICATOR
ITABLE ENTRY (3)
INDEX_TRANSITION_INDICATOR
TABLE ENTRY (4)
INDEX_TRANSITION_INDICATOR
TABLE ENTRY (5)
TABLE_END_INDICATOR

FIG. 10